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# Plant Disease Outlook for 1964

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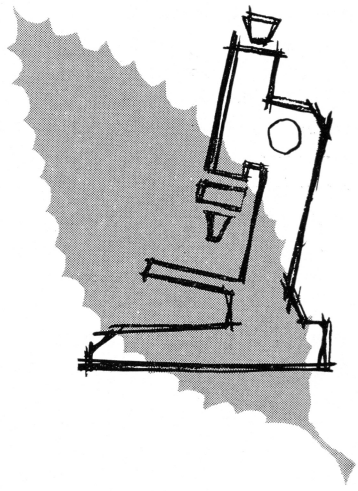


**One thing you can be sure of in 1964: Plant diseases will hit SOME of Iowa's fields and gardens. As always, weather will have great influence. Here's a rundown on 1963 plant disease problems and a look ahead at '64.**

***by Robert C. Lambe***

DISEASE will attack *some* of Iowa's field and garden plants this year. How serious and how widespread the diseases will be depends on the weather during the growing season and, of course, the presence of infectious inoculum.

Infection usually starts with a carryover on the spot from the previous year. Since the infectious organisms can't be eliminated once they're in the plant, disease prevention is important. Many field, vegetable and flower diseases can be avoided by planting treated seed and disease-free sets, bulbs, plants and young trees. Protective fungicides and fumigant treatments can also prevent or hold in check such diseases.

Two specific practices that reduce plant disease loss in our major field crops are planting disease-resistant varieties and rotating crops.

**Soybean Diseases:** The most serious diseases were stem canker, brown stem rot and bacterial wilt.

Stem canker was more serious than it has been for several years. Infected plants were killed several weeks before normal maturity. As high as 22 percent of the plants in one field were killed by stem canker. Infected plants retain their leaves up to the top long after they have been killed. Seed saved from such plants will be of low vigor.

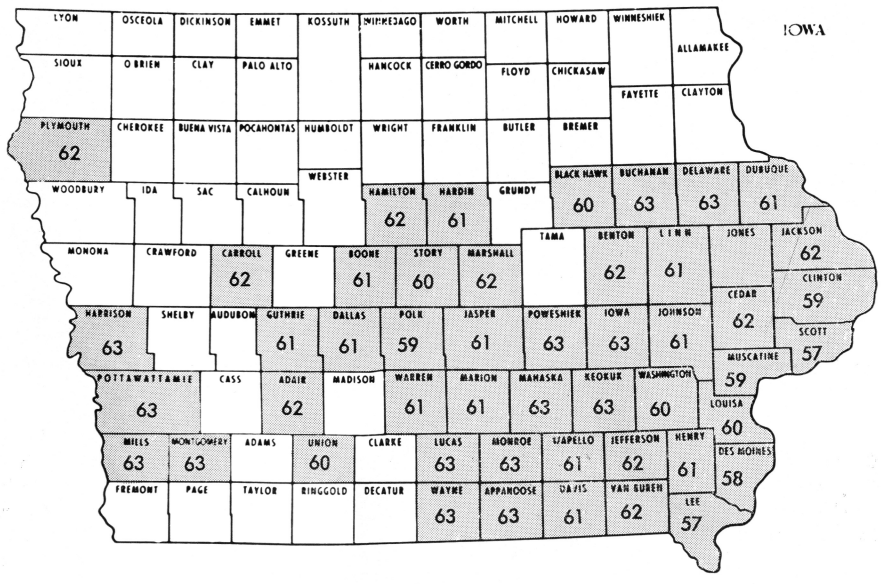
There is ample evidence that continuous or intensive cropping is potentially dangerous. For example, the once rare brown stem rot fungus is now found in 47 percent of the fields surveyed.

Once present in the soil, there is no known practical means of eliminating it. A 3-year study has shown yield losses of 33 percent from the disease. Corn grown continuously for 3, 4 and 5 years will reduce infection to 50, 20 and 10 percent, respectively. Soybeans were 100 percent infected when grown for a second year after 5 years of corn. Rotate crops if brown stem rot is a problem on your farm.

Bacterial wilt, a new disease, has become generally distributed over the state. There is evidence that this disease is seedborne. Seedlings from infected seed are often smaller than normal, wilt during warm parts of day, and develop marginal necrosis on the lower leaves of the plant.

**Corn Diseases:** Damage to corn fields from leaf blight was only moderate in 1963. But even moderate infection definitely affects the severity of stalk rot. Stalk rot is present to some extent in every field at harvest time every year but last year caused little lodging. Reductions of 8 to 16 percent in yield of severely rotted plants are not uncommon, and losses of 25 percent have been reported.

**Dutch Elm disease crosses Iowa in 5 years.**

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Early symptoms of stalk rot are early dying of the lower leaf sheath and softening and weakening of the stalk. The interior of the stem will be dissolved. As stalk rot continues to develop, the interior tissue becomes discolored, and mold growth may be seen. This is the stage most people recognize and is usually observed when stalks lodge from stalk rot every year. Unbalanced soil fertility, particularly excess nitrogen and deficiencies of potassium, increases the chances of stalk rot. High plant populations cause smaller stems, and a lower level of rot development can weaken stalks to the breaking point.

**Cereal Rust:** Stem rust of oats was very light. Severe damage from oat crown rust occured in individual fields of oats and could be traced to buckthorn growing nearby as hedges and windbreaks. Over-all damage from crown rust was light.

Volunteer oats were recently observed to be heavily infected with crown rust. This may be important because there will be more spores blowing south and infecting oats in the southern United States. This may in turn provide more spores for the return trip north next spring. Moisture conditions next spring will be very important for infection of oats.

Two new varieties of oats, Neal and Bonkee, have become available this year. They differ in their resistance to crown rust. Neal is resistant to some races of rust but very susceptible to certain new races of crown rust. Bonkee is tolerant to a greater number of crown rust races.

**Dutch Elm Disease:** Since Dutch elm disease invaded Iowa in 1957, it has spread rapidly and now has been confirmed in 47 counties (see map). Every Iowa community with American and Red Elm trees either has Dutch elm disease or can count on it appearing within a few short years. Experiences in states to the east of Iowa indicate that there is no way to escape an invasion of the disease.

With Dutch elm disease on the way, elm trees in the community represent a cost. It will cost some money for removal if no protective steps are taken and elm trees are allowed to die. It will cost money to

**Common Plant Diseases and Conditions Favoring Their Recurrence in 1964**

| Crops | Diseases | Occurrence in Iowa in 1963 | Conditions favoring disease |
|---|---|---|---|
| **Field crops** | | | |
| Alfalfa | Foliage, stem | General | High humidity, delayed harvesting. |
| | Root rots | Scattered | Local soil situation, susceptible varieties. |
| Corn | Leaf blight | Moderate | Frequent heavy dews, susceptible hybrids. |
| | Stalk rot | General | Susceptible hybrids, nutrient imbalance, delayed harvesting, high plant populations. |
| Small grains | Stem rust | **Locally severe** | Cool, wet, late spring, spore showers from south. |
| | Crown rust | **Locally severe** | Late planting, moderate temperatures, wet weather, nearness to buckthorn. |
| | Wheat streak mosaic | **Locally severe** | Warm or hot weather, early plantings. |
| Soybeans | Bacterial leaf spot | General | Wet season, poor rotation. |
| | Root rot | Moderate | Wet soil, low soil temperatures. |
| | Stem canker | General | Continuous cropping, susceptible varieties. |
| | Brown stem rot | **Locally severe** | Continuous cropping. |
| | Bacterial wilt | General | Selecting seed from diseased plants. |
| **Home & garden plants** | | | |
| Flowers & shrubs | Leafspots, bud blights | Moderate | Poor sanitation, wet weather, crowding. |
| | Powdery mildew | Moderate | Dry summers, shading. |
| Shade trees | Evergreen needle & twig blight | General | Unpruned, wet weather, low vigor. |
| | Anthracnose | General | Poor sanitation, wet weather, unpruned, low vigor. |
| | Verticillium wilt | Moderate | Unpruned, low vigor, drouth. |
| | Dutch elm | Spread to 14 more counties | Unpruned, unsprayed, poor sanitation. |
| | Oak wilt | General | Poor sanitation. |
| Tomatoes, potatoes | Early blight | Moderate | Warm, wet weather. |
| | Late blight | Light | Continued cool, wet weather. |
| Tree fruits | Apple scab | Moderate | Cool, wet spring and early summer. |
| | Cedar-apple rust | General | Alternate rain and sunshine, windy weather. |
| Lawn disease | "Melting out" | General | Light frequent watering, dense mulch of lawn clippings. |
| | Powdery mildew | **Locally severe** | Cool nights, shaded areas, low vigor. |
| **Fruit crops** | | | |
| Apples, pears | Fire blight | Moderate | Moderate temperatures, wet weather. |
| | Scab | Moderate | Cool, wet spring and early summer. |
| | Summer rots of apples | General | No pruning, low vigor. |
| Cherries | Cherry leaf spot | Moderate | Wet weather, poor sanitation. |
| Grapes | Downy mildew | Light | Moderate temperatures, wet weather. |
| Raspberries | Anthracnose | **Heavy** | Unpruned brambles, wet weather, weeds. |
| Strawberries | Black root rot | **Heavy** | Winter injury, poorly-drained soils. |
| | Leaf spot | Moderate | Wet season, poor sanitation, susceptible varieties. |

fight the disease with a sanitation and spraying program.

Based on the experience of some Iowa cities over a 10-year period, a sanitation and spraying program need cost but little more than doing nothing except remove trees as they die. Such a program can save up to 80 percent of the elms.

**Fruit Diseases:** Apple scab and cedar-apple rust were serious diseases in the home yard. Rains coming during the spring helped initiate the diseases, and large amounts of inoculum were present on infected leaves, stems and fruits. This disease inoculum will be important next year provided the weather is favorable (which it usually is).

No one knows what weather conditions are in store for your individual farm or yard this year. Certain steps can be taken to keep disease losses at a minimum regardless of weather. Your best insurance is to carry out as many of these practices as practical:

1. Plant disease-free, high germination seed of varieties recommended for your locality. Use seed certified disease-free when available.

2. Clean and treat all oats, wheat, barley, flax, grass, vegetable and flower seed before planting. Seed already cleaned and treated can be purchased.

3. Plant as early as possible in a well-prepared, well-drained seedbed. Root and crown diseases are usually more prevalent in poorly drained soils.

4. Continuous cropping favors build-up of certain soil-borne diseases. Rotate with unrelated plants.

5. Avoid excessively close and deep cultivation around corn, sorghum and other row crops. Cultivator wounds allow easy entrance for organisms producing root, crown and stalk rots.

6. Follow a good sanitation program as soon after harvest as possible. Remove, and burn garden crop debris, or plow this refuse under deeply and cleanly.

7. Apply protective fungicidal sprays or dusts on trees and bush fruits, potatoes, tomatoes, vine crops and flowers, especially those that have had foliage diseases in the past.

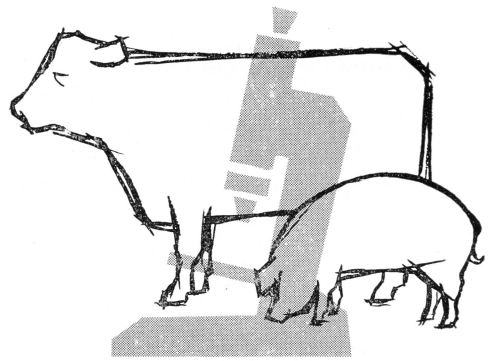
8. See that evergreens have adequate soil moisture in the fall so that they will be less susceptible to winter injury and spring diseases.

9. Eradicate buckthorn hedges and windbreaks to reduce oat crown rust losses.

# Livestock Disease Situation - 1964

**Iowa livestock producers face some special livestock disease problems. Current trends in livestock production point up the value of livestock DISEASE PREVENTION before losses occur and medical treatment is needed.**

***by John B. Herrick, D.V.M.***



CERTAIN CURRENT TRENDS in the Iowa livestock business appear almost sure to continue. Those trends include:

– Specialized production;

– Greater livestock numbers on fewer production units;

– Narrow margin of profit;

– Increased emphasis on efficient use of feed and growth rate.

For Iowa livestock producers, these trends have many implications – especially in the area of disease control. Larger production units with greater numbers and greater expected performance put extra stress on livestock. So the concept of preventing disease before losses occur assumes greater importance than ever.

In the high volume, low profit margin livestock business of the future, it will be increasingly important, probably essential, that disease prevention be incorporated with other elements of production such as nutrition, housing and handling, breeding, and marketing. Failure to use currently available methods and knowledge to *prevent* disease is one of the biggest profit drains on the livestock business today.

JOHN B. HERRICK is professor of veterinary medicine and extension veterinarian.

## Recent Progress . . .

The past year has seen some notable progress in livestock disease control. The following were particularly important to Iowa livestockmen:

*Passage* by the Iowa legislature of the cattle and swine brucellosis bills.

*Passage* of the sheep scab control bill.

*Progress* in the hog cholera eradication program.

*Stricter enforcement* of health requirements on interstate shipments of livestock.

*Program for testing* abnormal